

Claims

1. Apparatus (10) for measuring the chromatic dispersion (CD) of an optical fibre (50), comprising:

- an optical source (11) able to generate optical signals at variable wavelength;

- a signal generator (12) able to generate modulation signals;

- a modulator (19) able to generate modulated optical signals on the basis of said optical signals and of said modulation signals;

- a coupler (15) able to send said modulated optical signals to a first end of said fibre (50):

characterised in that

- said signal generator (12) comprises means able to generate impulsive electrical signals having variable amplitude, and duration and periodicity determined according to the characteristics of said fibre (50);

- said fibre (50) comprises in correspondence with a second end a reflecting element (51) able to reflect said modulated optical signals and to generate reflected optical signals having a reflected modulation component; and by

- comparison means (14, 16, 18) associated to said first end of said fibre (50) and able to measure the phase difference between said modulation signals and said reflected modulation component.

2. Apparatus (10) as claimed in claim 1 characterised in that

- said coupler (15) comprises means able to receive said reflected optical signals; and

- said comparison means (14, 16) comprises

- an optical receiver (16) connected to said coupler (15) and able to convert said reflected optical signals into electrical signals representative of said reflected modulation component; and

- a phase comparator (14) connected to said signal generator (12) and to said optical receiver (16) and able to generate an electrical signal representative of said phase difference.

5 3. Apparatus as claimed in claim 1 or 2 characterised by

- control means (18) associated respectively to said optical source (11) and to said signal generator (12) and able selectively to control the wavelength of said optical signals and the characteristics of said modulation signals.

10 4. Apparatus as claimed in claim 3 characterised in that said control means (18) comprise

- computing means (18) able to calculate the chromatic dispersion (CD) of said optical fibre (50) on the basis of the phase difference measured as the wavelength of said
15 optical signal varies.

5. Method for measuring the chromatic dispersion (CD) of an optical fibre (50) characterised by the steps of

- generating optical signals (11) at variable wavelength;
- generating modulation signals (12) shaped by impulse
20 electrical signals having predetermined phase, variable amplitude, duration and periodicity determined according to the characteristics of said fibre;
- modulating said optical signals (19) with said modulation signals;

25 - sending the optical signals modulated with said modulation signals to a first end of said fibre (50);

- reflecting at a second end of said fibre (51) said modulated optical signals in such a way as to obtain reflected optical signals having a reflected modulation
30 component;

- measuring in correspondence with said first end the phase difference between said modulation signal and said reflected modulation component.

6. Method as claimed in claim 5 characterised by the additional step of

- calculating (18) the chromatic dispersion (CD) of said optical fibre (50) on the basis of the phase difference

5 measured as said wavelength of said optical signals varies.